

ORACLES - P-3 Orion - WFF 10/07/18 Science Report

Aircraft: [P-3 Orion - WFF \(See full schedule\)](#)

Date: Sunday, October 7, 2018

Mission: ORACLES

Mission Location: Sao Tome and Principe

Mission Summary:

Flight Summary:

Take-off at 07:04UT. Found a pollution layer at 12-13kft during climb-out from Sao Tome. During transit to 15S we recognized sloping low cloud tops from 2S to 7S with sloping aerosol layers above. From 10 to 15S lidar curtain indicated mid-level clouds at the top of the outflow plume and embedded in the plume. This was verified during in situ sampling legs in the plume on the Northbound leg. First leg at 13kft was very polluted (80Mm-1 scat, 230ppb CO). Second leg at 8kft was less polluted (40-60 Mm-1 scat, ~200ppb CO). This was forecast qualitatively in WRF and GEOS-5, and linked to a younger plume at higher altitude. Boundary layer work between 12S and 9.5S found a fairly polluted BL (115ppb CO). Visual detection of low-level Cu well below flight level hinted at some decoupling of the BL. Profiling to the surface yielded different assessments on mixing state from different instruments. BL work was followed by extended run at 8kft, which HiGEAR used for extended testing. After ascent to 18kft and partial transit North, pilots informed flight scientists that there was an extra hour of time to use for science. Decision on-board was to use clear slot at 9S for square spiral and radiation work. This spiral happened in most clear conditions encountered in ORACLES-2018 yet, with minimal low-clouds in the FOV at low altitudes. During transit home, we flew an extended leg (1hr+) at 8kft, before ascending to transit altitude of 19kft. Landed at 15:08UT. See flight report file for details.

Submitted by: Jens Redemann on 10/12/18

File:

 [PRF06Y18_20181007_FlightScienceReport_V3.pdf](#)

Related Flight Report:

P-3 Orion - WFF 10/07/18

Flight Number: ORACLES Science Flight #6

Payload Configuration: ORACLES

Nav Data Collected: No

Total Flight Time: 8.4 hours

Archive Data: [20181007](#) (111 binary files; 26 archive (plain-text) files; 39 image files)

Submitted by: Mike Cropper on 10/08/18

Flight Segments:

From:	FPST	To:	FPST
Start:	10/07/18 07:55 Z	Finish:	10/07/18 16:20 Z
Flight Time:	8.4 hours		
Log Number:	19P018	PI:	Jens Redemann
Funding Source:	Hal Maring - NASA - SMD - ESD Radiation Science Program		
Purpose of Flight:	Science		
Miles Flown:	2000 miles		

Flight Hour Summary:

	18P004	19P018
Flight Hours Approved in SOFRS	188.5	
Flight Hours Previously Approved		144
Total Used	44.5	110
Total Remaining		34

19P018 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
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10/02/18	ORACLES Science Flight #3	Science	8.5	8.5	135.5	1940
10/03/18	ORACLES Science Flight #4	Science	8.5	17	127	1970
10/05/18	ORACLES Science Flight #5	Science	9	26	118	2000
10/07/18	ORACLES Science Flight #6	Science	8.4	34.4	109.6	2000
10/10/18	ORACLES Science Flight #7	Science	8.3	42.7	101.3	1970
10/12/18	ORACLES Science Flight #8	Science	5.3	48	96	800
10/15/18	ORACLES Science Flight #9	Science	7.8	55.8	88.2	1700
10/17/18	ORACLES Science Flight #10	Science	8.5	64.3	79.7	2000
10/19/18	ORACLES Science Flight #11	Science	8	72.3	71.7	1800
10/21/18	ORACLES Science Flight #12	Science	8.2	80.5	63.5	1800
10/23/18	ORACLES Science Flight #13	Science	8.1	88.6	55.4	1800
10/25/18	ORACLES Transit #1	Transit	7.8	96.4	47.6	2009
10/26/18	ORACLES Transit #2	Transit	7	103.4	40.6	2100
10/27/18	ORACLES Transit #3	Transit	5.8	109.2	34.8	1692
10/27/18	ORACLES Transit #4	Transit	0.8	110	34	72

Source URL: https://airbornescience.nasa.gov/science_reports/ORACLES_-_P-3_Orion_-_WFF_10_07_18_Science_Report#comment-0

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Page Editor: Brad Bulger

NASA Official: Bruce A. Tagg

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

18P004 Flight Reports						
Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
09/17/18	ORACLES ATF	Check	1.3	1.3	187.2	0
09/19/18	ORACLES PTF	Check	3.7	5	183.5	0
09/21/18	ORACLES Transit #1	Transit	6.3	11.3	177.2	1716
09/22/18	ORACLES Transit #2	Transit	8.2	19.5	169	2131
09/24/18	ORACLES Transit #3/Science Flight	Transit	9.3	28.8	159.7	2500
09/27/18	ORACLES Science Flight #1	Science	8	36.8	151.7	1875
09/30/18	ORACLES Science Flight #2	Science	7.7	44.5	144	2400